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THE UNEMPLOYMENT INSURANCE TAX AND LABOR TURNOVER: FURTHER EMPIRICAL RESULTS

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The research reported here is an extension of a previous enquiry by Brechling and Jehn into the relationships between labor turnover and the unemployment insurance tax. First, the data base was extended through 1977, and the original models were re-estimated. The original and enlarged data sets yielded similar conclusions. Second, the influence of the taxable wage base of the social security tax upon labor turnover was examined. This taxable wage base seems to have a different impact from that of the taxable wage base of the unemployment insurance tax. Third, the

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ABSTRACT

The research reported here is an extension of a previous enquiry by Brechling and Jehn into the relationships between labor turnover and the unemployment insurance tax. First, the data base was extended through 1977, and the original models were re-estimated. The original and enlarged data sets yielded similar conclusions. Second, the influence of the taxable wage base of the social security tax upon labor turnover was examined. This taxable wage base seems to have a different impact from that of the taxable wage base of the unemployment insurance tax. Third, the relationships between the seasonal pattern of labor turnover and the unemployment insurance tax were examined. The results tended to be weak. Viewed as a whole, the results of the new investigation are not as strong as the original ones, but they do support the conclusion that there are significant relationships between labor turnover and the parameters of the unemployment insurance tax.

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INTRODUCTION

The research reported here continues earlier work that was also sponsored by the U.S. Department of Labor, ASPER (Contract No. J-9-M-6-0103). That report, reference [3], was submitted in April 1978.

Under the new contract (No. J-9-M-8-0130), the earlier work has been extended in three directions:

- The data base has been extended through 1977 and the original regression equations were re-run.

- The impact of the tax parameters on the seasonal patterns of labor turnover has been examined.

- The influence of the taxable wage base of the Social Security (SS) tax upon labor turnover has also been examined.

The new empirical analysis yields several conclusions.

First, the original and the enlarged data sets have led to very similar results. Hence, the original conclusions about the impact of the unemployment insurance (UI) tax parameters on labor turnover are supported by the new evidence.

Second, the theoretical predictions about the relationships between the tax parameters and the seasonal patterns of labor turnover are not supported substantially by the empirical results. Most of the relevant parameter estimates are insignificant and the signs of the few significant ones tend to be contrary to the theoretical predictions. Third, the introduction of the taxable wage base of the SS tax does not affect the basic results but reduces the overall goodness of fit of the regression equations.

THE THEORETICAL PREDICTIONS

The theoretical relationships between the parameters of the UI tax structure and labor turnover have been

discussed in three previous papers [references 1, 2, and 3]. The main conclusions of these discussions will be presented here. The interested reader is referred to the three papers for details.

The theoretical and empirical analyses have been applied to states using the reserve ratio method of experience rating. Under this method the tax rate for a firm is related to its reserve ratio, which is defined as the ratio of the firm's UI account balance to its taxable payroll. The change in the firm's balance is the difference between its tax payments and the benefits paid to its ex-employees. A typical tax schedule is presented in figure 1.

There are six relevant parameters of such tax systems:

They are: (i) the taxable wage base ($\tilde{w}$), which is the maximum amount of an employee's annual earnings that is treated as taxable payroll; (ii) the tax rate that applies to firms with negative reserve ratios (NEGTAX); (iii) the tax rate that applies to firms with small positive reserve ratios (MAXTAX); (iv) the average slope of the tax schedule over the region which is characterized by a large number of downward steps (SLOPE); (v) the minimum tax rate payable by firms with relatively large reserve ratios (MINTAX); and (vi) the reserve ratio (MINRES) at which MAXTAX ceases and the sloped part of the tax schedule begins to apply.

The parameters of the UI tax may affect labor turnover for two reasons. First, increases in labor turnover (especially in quits and new hires) tend to raise the taxable payroll. Second, increases in labor turnover (especially in layoffs) tend to raise the tax rate. A cost-minimizing firm ought to take account in its turnover decisions of the marginal tax cost of labor turnover.

The derivations of the sign predictions in the relationships between labor turnover and the parameters of the tax structure are given in reference [1]. In summary, they are:

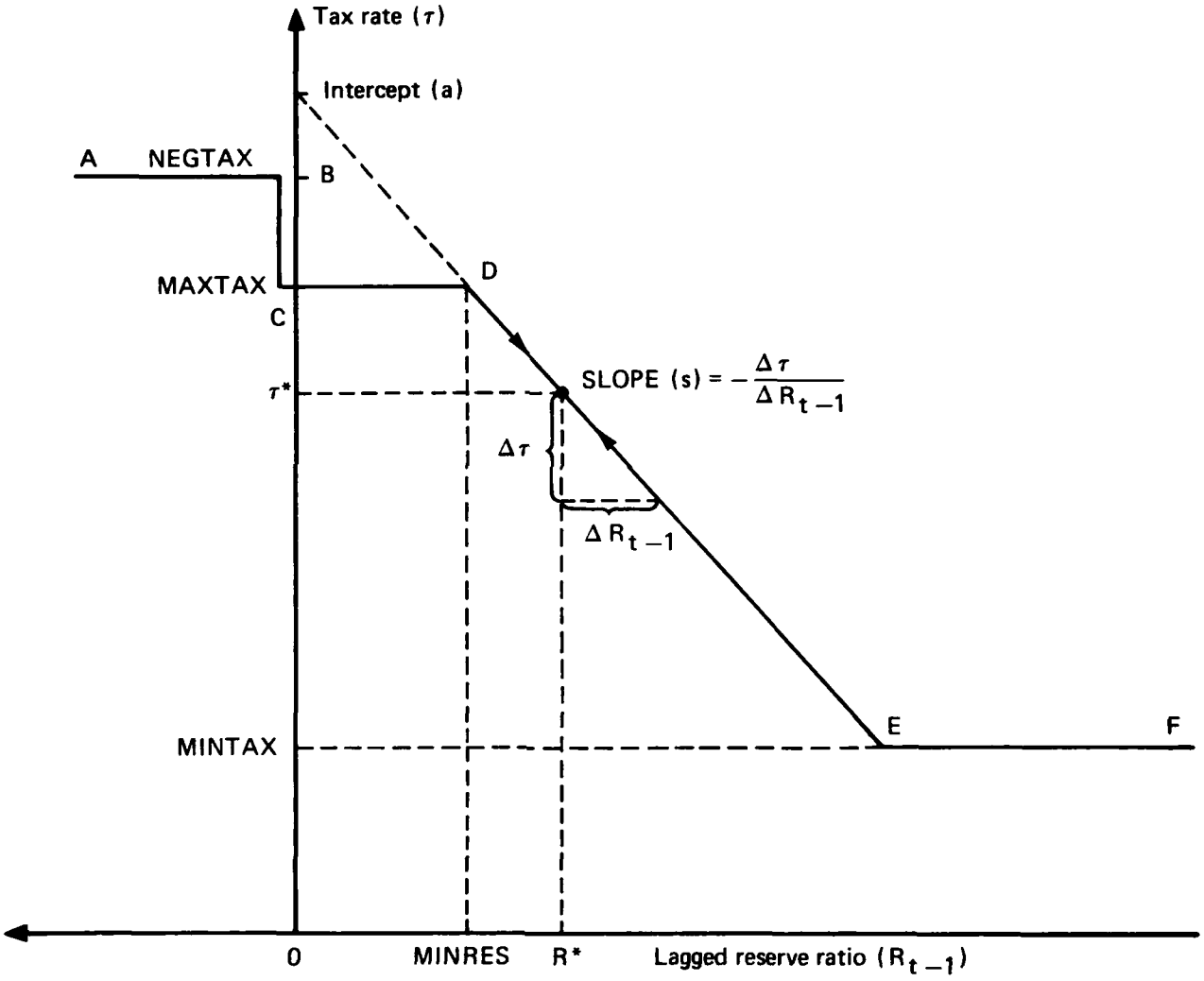

FIG. 1: TYPICAL TAX SCHEDULE IN RESERVE RATIO STATES

(i) $\frac{\partial q}{\partial \tilde{w}} \lesseqgtr 0$ as $\tilde{w} \lesseqgtr \frac{1}{2} w$ where q stands for labor turnover and w for the average annual earnings per employee. This relationship is expected to be weaker for layoffs than for quits.

(ii) $\frac{\partial q}{\partial w} < 0$

(iii) $\frac{\partial q}{\partial SLOPE} \lesseqgtr 0$

(iv) $\frac{\partial q}{\partial NEGTAX} < 0$

(v) $\frac{\partial q}{\partial MAXTAX} < 0$ for quits and > 0 for layoffs

(vi) $\frac{\partial q}{MINTAX} < 0$ for quits and > 0 for layoffs

(vii) $\frac{\partial q}{\partial MINRES} < 0$ for quits and $\gtreqless 0$ for layoffs,

The relationships between the parameters of the tax structure and the seasonal patterns of labor turnover have not been analyzed before, and will now be considered in some detail.

The UI tax gives firms an incentive to alter the seasonal pattern of labor turnover because taxable payrolls are not transferable from one firm to another. Suppose, for instance, that a firm has an employment position for a salary of $12,000 per annum and that the taxable wage base is $6,000. If the employment position is filled by one employee for an entire calendar year, the taxable payroll is equal to $6,000. If, on the other hand, the position is filled by one employee until July 1 and by another newly hired employee from July 1 to December 31, then the taxable payroll is equal to $12,000 -- the first $6,000 earned by each of the two employees, because the law does not permit the transfer of any accumulated taxable payroll from one employer to another. Thus the taxable payroll per employment position (m) lies somewhere between the taxable wage base ($\tilde{w}$) and the annual earnings (w).

The above example shows that the firm can reduce its taxable payroll by reducing its intra-year labor turnover by either not turning employees over or moving the turnover activity to the beginning or the end of the

calendar year. Thus if the first employee had been laid off and the second employee had been hired on January 1, rather than on July 1, the taxable payroll would have been $\tilde{w}$ - $6,000.

The relationships between the taxable wage base, annual earnings, labor turnover and the taxable payroll are illustrated in figure 2. They are limited to cases where $\tilde{w} \leq w$.

The taxable wage base ($\tilde{w}$) is measured along the horizontal and the taxable payroll along the vertical axis. With annual earnings at w_1 and positive intra-year labor turnover at q_1, the taxable payroll (m) is a non-linear function of the taxable wage base ($\tilde{w}$).When $\tilde{w}=0$ then $m=0$ and the tax disappears. At the other extreme, when $\tilde{w}=w_1$, the tax is levied on the total payroll and $m=\tilde{w}=w_1$. Between the two extreme positions, when $0 < \tilde{w} < w_1$, the taxable payroll exceeds the taxable wage base, that is $\tilde{w}<m<w_1$. The excess of m over $\tilde{w}$, namely $(m-\tilde{w})$, varies with annual earnings (w) and the amount of intra-year labor turnover (q). As annual earnings rise from w_1 to w_2, the entire curve moves from (0-A) to (0-B).For a given average annual earnings, w_1, the curve (O-A) moves closer to the 45° lines as labor turnover declines from q_1 to q_2.

Because the tax paid by the firm for each employment position is the product of the taxable payroll (m) and the tax rate (τ) there is a marginal tax cost of intra-year labor turnover. This cost increases with the tax rate (τ) and with annual earnings (w). Further, the relationship between this marginal tax cost and $\tilde{w}$ is non-linear, being positive for low $\tilde{w}$'s and negative for high $\tilde{w}$'s. Hence, the firm has an incentive to reduce intra-year labor turnover when τ, w and low $\tilde{w}$'s rise, and to raise it when high $\tilde{w}$'s rise. Because the above arguments apply only to labor turnover which involves newly hired employees, the theoretical predictions are likely to be stronger for quits and new hires than for layoffs most of which are temporary.

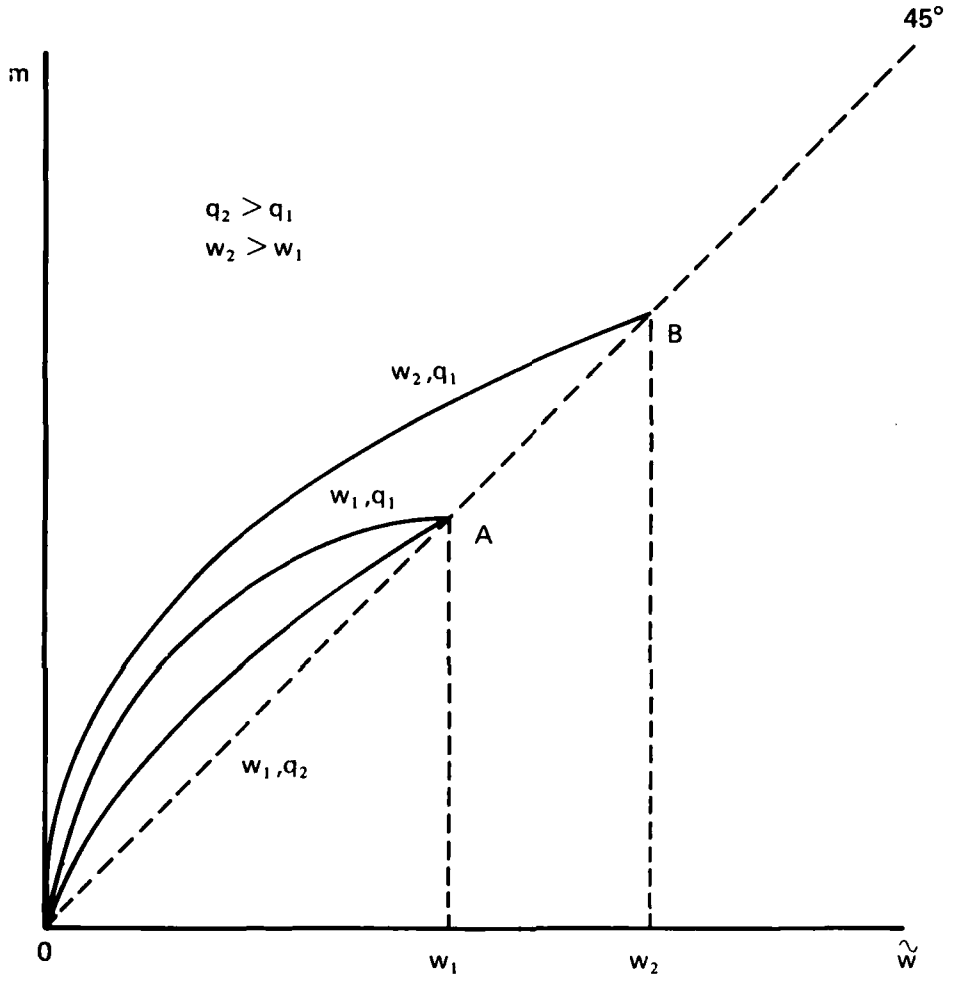

FIG. 2: THE RELATIONSHIP BETWEEN THE TAXABLE WAGE BASE ($\tilde{w}$) AND THE TAXABLE PAYROLL

The relationship between the tax rate (τ) and the parameters of the tax rate is quite straightforward and apparent from inspection of figure 1. The tax rate tends to rise with increases in NEGTAX, MAXTAX, MINTAX and MINRES and to fall with increases in SLOPE.

If σ stands for the relative amount of labor turnover that takes place at the end and the beginning of the calendar year, the above theoretical arguments thus imply the following sign predictions:

(i) $\frac{\partial \sigma}{\partial \tilde{w}} > 0$ for low $\tilde{w}$ and < 0 for high $\tilde{w}$

(ii) $\frac{\partial \sigma}{\partial w} > 0$

(iii) $\frac{\partial \sigma}{\partial \text{NEGTAX}} > 0$

(iv) $\frac{\partial \sigma}{\partial \text{MAXTAX}} > 0$

(v) $\frac{\partial \sigma}{\partial \text{MINTAX}} > 0$

(vi) $\frac{\partial \sigma}{\text{MINRES}} > 0$

(vii) $\frac{\partial \sigma}{\text{SLOPE}} < 0$

THE EMPIRICAL RESULTS

The empirical results presented in reference [3] were based on an analysis of a panel of cross-section and time series data. The cross-sections referred to states and the time series to the years 1962 to 1969. After extending the data through 1977 they were used in the following three sets of empirical analyses: First, the relationships between labor turnover and the parameters of the UI tax structure were reexamined. Second, the taxable wage base ($\tilde{w}$) was redefined as the mean of the taxable wage bases for UI and the SS tax. Third, the relation between the seasonality of labor turnover and the various parameters of the tax structures were

estimated. Let us examine the three sets of results in turn.[1]

The first five rows of Tables 1, 2 and 3 show the results of the re-estimation of the original model with the enlarged data set for total manufacturing industries, and the two subsets: durable goods industries and nondurable goods industries. The corresponding results for eleven two-digit industries are presented in appendix tables A-1 to A-5. The new results differ somewhat from the previous ones:

- The nonlinear relationship between labor turnover and the taxable wage base seems to be weaker. Particularly in total manufacturing the signs of $\tilde{w}$ and $\tilde{w}^2$ have been reversed. For durables and about eight of the eleven two-digit industries, however, the estimated coefficients of $\tilde{w}$ and $\tilde{w}^2$ had the predicted signs.

- The regression coefficients of the hourly wage rate (w) are very similar to the previous ones: mostly negative for accessions, new hires and quits but positive for layoffs.

- The coefficients of NEGTAX are generally negative as in the previous results and as predicted by the theory.

- MAXTAX should have a negative impact on quits and a positive one on layoffs. This prediction is supported quite strongly by both the first and the second set of results.

- The regression coefficients of SLOPE tend to be negative, but not very significant.

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[1]The taxable wage base ($\tilde{w}$) and the hourly wage rate (w) were deflated by the industry's wholesale price index.

TABLE 1

All Manufacturing Industries

$\tilde{w}$: Taxable Wage Base of UI

	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2
Accessions	.43019	-.07324	-1.1299	-.1782	.5151	-.6510	.0508	-.2393	.4625
	(4.57)	(5.22)	(9.01)	(2.52)	(3.44)	(.28)	(3.89)	(3.28)	
New Hires	.3709	-.06004	-1.2021	-.1518	.1349	.1148	.0636	-.1709	.5431
	(4.23)	(4.60)	(10.30)	(2.31)	(.97)	(.53)	(5.22)	(2.51)	
Separations	.3689	.0642	-.9555	-.1314	-.4786	-.0242	.0594	-.2268	.4429
	(3.93)	(4.59)	(7.64)	(1.87)	(3.27)	(.10)	(4.55)	(3.11)	
Quits	.2308	-.0384	1.4144	-.4842	-.1701	.1233	.0462	-.0075	.6375
	(3.39)	(3.80)	(15.62)	(.95)	(1.58)	(.74)	(4.89)	(.14)	
Layoffs	.0641	-.0016	.4519	-.0809	.6416	-.2249	-.0014	-.2015	.4480
	(1.19)	(2.03)	(6.30)	(2.00)	(7.50)	(1.69)	(.18)	(4.82)	

$\tilde{w}$: Mean of Taxable Wage Bases of UI and Social Security

Accessions	.7742	.008778	-1.1195	-.1535	.3821	-.2582	.05353	-.1809	.4406
	(3.13)	(3.62)	(8.69)	(2.14)	(2.48)	(1.09)	(4.02)	(2.39)	
New Hires	.8286	.00875	-1.2088	-.1332	.01012	-.0562	.0655	-.1148	.5356
	(3.65)	(3.92)	(0.20)	(2.02)	(.07)	(.26)	(5.35)	(1.65)	
Separations	.9427	-.0147	-.9737	-.1127	.3429	-.2163	.06132	-.1609	.4402
	(3.90)	(4.40)	(7.72)	(1.60)	(2.27)	(.93)	(4.70)	(2.17)	
Quits	.7462	-.007871	-1.4410	-.0389	-.2729	-.00487	.0471	.0404	.6446
	(4.32)	(4.63)	(15.97)	(.77)	(2.52)	(.29)	(5.04)	(.76)	
Layoffs	-.0559	-.00033	.4703	.0737	.6285	-.2545	-.000496	-.1971	.4412
	(.40)	(.24)	(6.47)	(1.82)	(7.21)	(1.91)	(.065)	(4.62)	

TABLE 2

DURABLE GOODS INDUSTRIES

	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2
$\tilde{w}$: Taxable wage base of UI[a]									
Accessions	-45.98[a]	84.01[a]	-1.884[a]	-0.131[a]	0.077	-0.305	-0.030[a]	0.179[a]	0.5813
	(2.37)	(2.54)	(15.48)	(1.86)	(0.53)	(1.17)	(1.54)	(2.50)	
New hires	-42.45[a]	78.65[a]	-2.094[a]	-0.133[a]	-0.067	-0.061	-0.024	0.140[a]	0.7349
	(2.57)	(2.80)	(20.20)	(2.21)	(0.54)	(0.28)	(1.45)	(2.31)	
Separations	-42.69[a]	81.92[a]	-1.698[a]	-0.085	0.093	-0.280	-0.020	0.187[a]	0.5366
	(2.16)	(2.44)	(13.70)	(1.18)	(0.62)	(1.05)	(1.01)	(2.57)	
Quits	-38.97[a]	71.19[a]	-1.846[a]	-0.088[a]	-0.209[a]	-0.064	-0.019[a]	0.169[a]	0.7988
	(3.24)	(3.48)	(24.45)	(2.02)	(2.29)	(0.39)	(1.56)	(3.82)	
Layoffs	1.81	-0.76	0.172[a]	-0.013	0.288[a]	-0.144	-0.001	0.004	0.5035
	(0.16)	(0.04)	(2.39)	(0.32)	(3.32)	(0.93)	(0.06)	(0.09)	
$\tilde{w}$: Mean of taxable wage bases of UI and Social Security									
Accessions	6.50[a]	-0.63[a]	-1.863[a]	-0.143[a]	0.101	-0.226	-0.024	0.162[a]	0.5750
	(1.74)	(1.58)	(15.24)	(2.01)	(0.68)	(0.86)	(1.23)	(2.26)	
New Hires	4.15	-0.37	-2.067[a]	-0.145	-0.031	0.047	-0.016[a]	0.116	0.7282
	(1.29)	(1.09)	(19.74)	(2.39)	(0.25)	(0.21)	(0.96)	(1.90)	
Separations	8.05[a]	-0.75[a]	-1.683[a]	-0.095	0.108	-0.224	-0.016	0.176[a]	0.5322
	(2.11)	(1.86)	(13.55)	(1.33)	(0.72)	(0.84)	(0.80)	(2.42)	
Quits	4.56[a]	-0.43[a]	-1.825[a]	-0.099[a]	-0.182[a]	0.019	-0.013	0.151[a]	0.7919
	(1.94)	(1.73)	(23.83)	(2.22)	(1.97)	(0.12)	(1.04)	(3.36)	
Layoffs	2.12	-0.20	0.164[a]	-0.012	0.275[a]	-0.176	-0.003	0.012	0.5049
	(0.96)	(0.85)	(2.28)	(0.29)	(3.17)	(1.15)	(0.25)	(0.28)	

[a]Taxable wage bases are divided by 100.

TABLE 3

NONDURABLE GOODS INDUSTRIES

	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2
$\tilde{w}$: Taxable wage base of UI[a]									
Accessions	0.141	-0.0026	-1.713[a]	-0.034	0.645[a]	-0.732[a]	-0.039[a]	-0.293[a]	0.5240
	(0.60)	(0.64)	(9.85)	(-.42)	(4.00)	(2.58)	(1.74)	(3.58)	
New hires	-0.075	0.0015	-1.943[a]	0.046	0.021	-0.653[a]	-0.021	-0.055	0.6304
	(0.36)	(0.42)	(12.83)	(0.66)	(0.15)	(2.64)	(1.07)	(0.77)	
Separations	0.089	-0.0015	-1.522[a]	-0.047	0.653[a]	-0.527[a]	-0.011	-0.306[a]	0.5108
	(0.37)	(0.37)	(8.72)	(0.80)	(4.04)	(1.85)	(0.49)	(3.73)	
Quits	-0.149	0.0028	-2.170[a]	0.035	-0.373[a]	-0.402[a]	-0.014	0.135[a]	0.7081
	(0.82)	(0.92)	(16.53)	(0.58)	(3.06)	(1.88)	(0.82)	(2.19)	
Layoffs	0.242	-0.0046	0.872[a]	-0.135[a]	1.028[a]	-0.155	-0.010	-0.434[a]	0.4455
	(1.49)	(1.65)	(7.33)	(2.50)	(9.33)	(0.80)	(0.68)	(7.76)	
$\tilde{w}$: Mean of taxable wage bases of UI and Social Security[a]									
Accessions	-4.96	0.49	-1.712[a]	-0.032	0.645[a]	-0.720[a]	-0.037[a]	09.294[a]	0.5251
	(1.01)	(0.98)	(9.86)	(0.41)	(4.03)	(2.55)	(1.66)	(3.61)	
New Hires	0.16	0.01	-1.942[a]	0.044	0.029	-0.631[a]	-0.020	-0.058	0.6301
	(0.04)	(0.01)	(12.82)	(0.65)	(0.21)	(2.57)	(1.03)	(0.81)	
Separations	-1.88	0.20	-1.522[a]	-0.047	0.651[a]	-0.529	-0.011	-0.306[a]	0.5108
	(0.38)	(0.39)	(8.72)	(0.59)	(4.04)	(1.87)	(0.47)	(3.74)	
Quits	2.54	-0.23	-2.170[a]	0.033	-0.365[a]	-0.385[a]	-0.014	0.133[a]	0.7076
	(0.68)	(0.60)	(16.51)	(0.55)	(3.01)	(1.80)	(0.81)	(3.74)	
Layoffs	-5.31[a]	0.50	0.872[a]	-0.133[a]	1.019[a]	-0.171	-0.010	-0.432[a]	0.4440
	(1.58)	(1.44)	(7.32)	(2.45)	(9.28)	(0.89)	(0.63)	(7.72)	

[a]Taxable wage bases are divided by 100.

- The signs of the coefficients of MINRES and MINTAX are mixed, some support and some reject the theoretical hypotheses.

A comparison of the 1962-69 results with the 1962-70 results shows that the larger sample gives more ambiguous answers. But there are still many strong associations between labor turnover and UI tax parameters. It seems reasonable to conclude that both the taxable wage base and the degree of experience rating play significant roles in the determination of labor turnover.

The second five rows of tables 1, 2 and 3 contain the estimated regression coefficients when $\tilde{w}$ is defined as the mean of the taxable wage bases for both the UI and the SS tax. The results for eleven two-digit industries are presented in appendix tables A-6 to A-10. In summary:

- The overall fit of these equations is slightly worse than when $\tilde{w}$ is taken to be the taxable wage base of only the UI tax.

- The coefficients of the parameters other than $\tilde{w}$ and $\tilde{w}^2$ are very similar in the two cases.

- The coefficients of $\tilde{w}$ and $\tilde{w}^2$, on the other hand, appear to be affected substantially by the definition of $\tilde{w}$. When $\tilde{w}$ consists of both tax bases its influence upon labor turnover still tends to be nonlinear but opposite to that predicted by the theory. Increases in $\tilde{w}$ typically first raise and then reduce labor turnover.

- Moreover, the coefficients of both $\tilde{w}$ and $\tilde{w}^2$ tend to be significant at conventional levels. This relatively strong result, which is at variance with the theory and the previous findings, deserves further investigation.

The final set of tests that have been performed with the larger data set concern the amount of labor turnover that is concentrated at the beginning and end of the calendar year because of the unemployment and

social security taxes. For this purpose an appropriate seasonality factor (σ) was computed and used as the dependent variable. The availability of monthly turnover data permitted the calculation of four different σ's for each industry, turnover category, state and year. In particular σ_1 is the ratio of the mean of labor turnover in December and January to the mean of labor turnover in the corresponding two years. The other seasonality measures σ_2, σ_3 and σ_4 are defined similarly except that their numerators contain the means of labor turnover from November to February, October to March and September to April, respectively.

As before, the independent variables are the parameters of the tax structure, the hourly wage rate, and annual intercept dummies. The taxable wage base is the mean of the taxable wage bases of the UI and the SS taxes. Both $\tilde{w}$ and w are deflated by the appropriate industry's wholesale price index.

Tables 4, 5 and 6 contain some results for total manufacturing, durable goods industries and nondurable goods industries. The equations refer to the σ which has yielded the highest R^2. The figures in tables 4, 5 and 6 show that there are not many consistent and significant patterns in the relationships between the parameters of the tax structure and the seasonality statistic.

The strongest set of coefficients refer to MINTAX. Almost all of them are negative and quite significant. Their negative sign does not, however, support the theoretical prediction as stated at the end of the previous section. Many of the other coefficients are quite weak. Of the few significant ones, most do not support the theoretical predictions. The relationships between the parameters of the tax structure and the seasonal pattern of labor turnover especially that between σ and MINTAX needs further study.

TABLE 4

SEASONALITY TESTS: ALL MANUFACTURING INDUSTRIES[a]

	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2
Accessions	-0.0284	0.0028	-0.0012	-0.0013	0.0095	0.0043	0.0130	-0.0196[a]	0.4010
	(0.99)	(0.95)	(0.11)	(0.21)	(0.69)	(0.19)	(1.00)	(2.89)	
New hires	0.0391	-0.0034	-0.0457[a]	-0.0112[a]	0.0380[a]	-0.0192	0.0078	-0.0233[a]	0.5459
	(1.15)	(0.98)	(3.36)	(1.53)	(2.33)	(0.71)	(0.50)	(2.90)	
Separations	-0.1403[a]	0.0134[a]	0.0767[a]	0.0092	0.0494[a]	-0.0046	-0.0235	-0.0338[a]	0.4473
	(2.97)	(2.75)	(4.06)	(0.90)	(2.18)	(0.12)	(1.10)	(3.03)	
Quits	-0.1336[a]	0.0130[a]	0.0474[a]	0.0069	0.0229	-0.0019	-0.0076	-0.0214[a]	0.5190
	(3.44)	(3.24)	(3.05)	(0.82)	(1.23)	(0.06)	(0.43)	(2.33)	
Layoffs	-0.3053[a]	0.0303[a]	-0.0674	0.0263	-0.1019[a]	0.0995	0.0051	-0.0056	0.5737
	(2.29)	(2.20)	(1.26)	(0.91)	(1.59)	(0.93)	(0.09)	(0.18)	

[a]Taxable wage bases are divided by 100.

TABLE 5

SEASONALITY TESTS: DURABLE GOODS INDUSTRIES[a]

	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2
Accessions	0.0079	-0.0010	-0.0082	0.0012	-0.0071	-0.0021	0.0122	-0.0086	0.4168
	(0.29)	(0.34)	(0 75)	(0.20)	(0.54)	(0.10)	(0.99)	(1.33)	
New hires	0.0540[a]	-0.0050	-0.0380[a]	-0.0068	0.0245[a]	0.0024	0.0115	-0.0213[a]	0.6544
	(1.66)	(1.49)	(2.92)	(0.97)	(1.58)	(0.09)	(0.78)	(2.77)	
Separations	-0.0504	0.0048	0.0825[a]	0.0096	0.0323	-0.0050	0.0487	-0.0244[a]	0.4844
	(0.73)	(0.64)	(3.73)	(0.77)	(1.22)	(0.10)	(1.40)	(1.87)	
Quits	0.0012	0.0002	0.0050	-0.0087	0.0372[a]	-0.0488[a]	-0.0120	-0.0127[a]	0.6420
	(0.04)	(0.07)	(0.45)	(1.40)	(2.81)	(2.00)	(0.69)	(1.96)	
Layoffs	-0.0768	0.0061	-0.1632[a]	-0.0495	-0.0488	0.1450	0.1008	0.0006	0.5574
	(0.38)	(0.28)	(2.52)	(1.35)	(0.63)	(1.01)	(0.99)	(0.02)	

[a]Taxable wage bases are divided by 100.

TABLE 6

SEASONALITY TESTS: NONDURABLE GOODS INDUSTRIES[a]

	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2
Accessions	-0.0766	0.0064	-0.0052	-0.0047	0.0109	-0.0038	0.0212	-0.0320[a]	0.3545
	(1.28)	(1.04)	(0.26)	(0.53)	(0.58)	(0.11)	(0.82)	(3.39)	
New hires	0.0295	-0.0031	-0.0527[a]	-0.0146[a]	0.0394[a]	-0.0074	0.0069	-0.0424[a]	0.5587
	(0.50)	(0.31)	(2.70)	(1.64)	(2.13)	(0.22)	(0.27)	(4.54)	
Separations	-0.1291[a]	0.0117[a]	0.1135[a]	0.0015	0.0207	0.0053	0.0240	-0.0244[a]	0.4364
	(1.96)	(1.72)	(5.24)	(0.15)	(1.01)	(0.14)	(0.84)	(2.35)	
Quits	0.0297	-0.0025	0.0119	-0.0083	0.0194	-0.0766[a]	-0.0177	-0.0131[a]	0.5487
	(0.65)	(0.53)	(0.79)	(1.22)	(1.36)	(2.94)	(0.90)	(1.82)	
Layoffs	-0.1707	0.0146	0.0153	0.0996[a]	-0.1645[a]	0.0307	-0.0330	0.0069	0.5592
	(0.65)	(0.54)	(0.18)	(2.53)	(2.01)	(0.20)	(0.29)	(0.17)	

[a]Taxable wage bases are divided by 100.

CONCLUDING REMARKS

The results of further investigations into the relationships between labor turnover and the parameters of the UI tax have been presented. The starting point of the research was reference [3], which contained strong and positive results. The research was extended in three directions.

First, data for 1970-77 were added and the original model was reestimated. The new results are somewhat weaker than the original ones but, by and large, in accordance with the theory.

Second, the taxable wage base ($\tilde{w}$) was defined as the mean of the taxable wage bases of the unemployment insurance tax and the social security tax. This change led to a radical change in the signs of $\tilde{w}$ and $\tilde{w}^2$. This new result is somewhat puzzling it does not affect the conclusion that the degree of experience rating in the unemployment insurance tax tends to have a significant influence on labor turnover.

Third, the influence of the tax parameters upon the seasonal pattern of labor turnover was investigated. The results were not very strong and did not lend strong support to the proposition that the tax structure induces firms to shift their labor turnover actions to the end and to the beginning of the calendar year. However, a few strong associations have been discovered. The scope of the research underlying this report was quite limited. Yet it has uncovered some puzzles and strong relationships which deserve further theoretical and empirical investigation.

REFERENCES

[1] Brechling, Frank: "The Incentive Effects of the U.S. Unemployment Insurance Tax," in Research in Labor Economics, I (edited by Ronald Ehrenberg), Greenwich, Conn., JAI Press, 1977.

[2] Brechling, Frank: "Unemployment Insurance Taxes and Labor Turnover: Summary of Theoretical Findings," Industrial and Labor Relation Review, July 1977.

[3] Brechling, Frank and Jehn, Christopher: "The Unemployment Insurance Tax and Labor Turnover: An Empirical Analysis," CRC 349, The Public Research Institute, Center for Naval Analyses, 1978.

TABLE A-1

Dependent Variable: Accessions

$\tilde{w}$: Taxable Wage Base of UI (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	16.07*	-58.10*	104.75*	-1.630*	-0.472*	0.097	-0.412	-0.052*	0.136	0.4291	193.
	(4.12)	(2.33)	(2.45)	(5.60)	(4.10)	(0.33)	(1.08)	(1.77)	(1.00)		
333 Primary Metal Products	15.35*	-79.35*	152.16*	-2.163*	-0.427*	-0.879*	0.714*	0.077*	1.054*	0.5679	210.
	(4.66)	(3.74)	(3.57)	(9.77)	(3.69)	(3.38)	(1.66)	(2.12)	(7.57)		
334 Fabricated Metal Products	17.54*	-71.61*	134.52*	-2.773*	0.008	-0.485*	0.080	0.023	0.477*	0.5209	206.
	(4.75)	(2.88)	(3.10)	(10.17)	(0.06)	(1.85)	(0.20)	(0.74)	(3.89)		
335 Machinery except Electrical	10.83*	-23.42	44.51	-1.665*	0.175*	-0.595*	-0.500	0.007	0.168*	0.5129	200.
	(3.54)	(1.05)	(1.13)	(8.88)	(1.57)	(2.95)	(1.48)	(0.24)	(1.68)		
336 Electrical Machinery	-12.53*	108.56*	-146.92*	-1.764*	-0.273*	0.683*	-0.307	-0.018	-0.029	0.4555	202.
	(1.51)	(2.19)	(2.07)	(7.72)	(2.28)	(2.96)	(0.77)	(0.60)	(0.24)		
337 Transportation Equipment	15.81	-51.80	104.16	-1.651*	-0.181	0.440	-1.234*	-0.199*	0.358	0.3898	150.
	(2.66)	(0.44)	(0.55)	(5.99)	(0.88)	(0.86)	(1.80)	(3.22)	(1.58)		
420 Food and Kindred Products	-5.13	152.15*	-280.49*	-3.379*	0.091	0.962*	-0.831	0.034	-0.558*	0.3847	249.
	(1.05)	(2.42)	(2.43)	(5.21)	(0.44)	(2.46)	(1.17)	(0.63)	(2.82)		
422 Textile Mill Products	41.42*	-239.79*	365.45*	0.048	0.057	0.502*	0.259	0.122*	-0.347*	0.4440	156.
	(2.87)	(2.82)	(2.85)	(0.08)	(0.33)	(2.06)	(0.53)	(3.34)	(2.63)		
426 Paper and Allied Products	7.88*	-13.35	26.70	-1.606*	-0.020	-0.472*	-0.054	0.042*	0.258*	0.5915	178.
	(2.36)	(0.68)	(0.87)	(8.99)	(0.21)	(2.25)	(0.18)	(1.58)	(2.59)		
429 Petroleum Refining and Related Products	-6.61	4.78	12.97	0.432	1.711*	-1.625*	2.925*	0.186*	0.005	0.8718	49.
	(1.02)	(0.15)	(0.27)	(0.67)	(3.32)	(1.87)	(4.77)	(2.45)	(0.01)		
430 Rubber and Miscellaneous Plastics Products	26.52*	-73.48*	117.76*	-2.960*	-0.363	0.238	0.981*	0.186*	0.057	0.5855	107.
	(2.67)	(1.58)	(1.79)	(5.73)	(1.12)	(0.54)	(1.72)	(2.54)	(0.31)		

TABLE A-2

Dependent Variable: New Hires

$\hat{w}$: Taxable Wage Base of UI (divided by 100

	CONST	$\hat{w}$	$\hat{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	15.68*	-65.39*	127.13*	-2.394*	-0.407*	0.100	0.026	-0.009	0.137	0.6467	193.
	(5.01)	(3.28)	(3.77)	(10.28)	(4.41)	(0.42)	(0.08)	(0.36)	(1.25)		
333 Primary Metal Products	14.34*	-67.81*	129.65*	-2.408*	-0.290*	-1.205*	0.731*	0.063*	1.022*	0.6652	210.
	(4.64)	(3.40)	(3.60)	(11.58)	(2.63)	(4.93)	(1.79)	(1.84)	(7.81)		
334 Fabricated Metal Products	16.55*	-60.81*	117.20*	-3.410*	-0.051	-0.643*	0.285	0.044*	0.479*	0.6933	206.
	(5.02)	(2.73)	(3.01)	(13.55)	(0.48)	(2.75)	(0.80)	(1.56)	(4.36)		
335 Machinery except Electrical	12.69*	-42.06*	83.13*	-1.933*	0.163*	-0.551*	-0.278	0.003	0.143*	0.6442	200.
	(4.49)	(2.12)	(2.28)	(11.11)	(1.58)	(3.45)	(0.88)	(0.32)	(1.55)		
336 Electrical Machinery	-6.79	83.09*	-111.21*	-1.755*	-0.270*	0.741*	-0.699*	-0.001	-0.238*	0.6881	202.
	(1.33)	(2.18)	(2.04)	(10.02)	(2.93)	(4.15)	(2.27)	(0.04)	(2.64)		
337 Transportation Equipment	0.65	48.66	-73.51	-2.356*	0.143	-0.537*	0.157	-0.022	0.188	0.7362	150.
	(0.07)	(0.83)	(0.79)	(15.10)	(1.22)	(2.13)	(0.46)	(0.72)	(1.46)		
420 Food and Kindred Products	1.77	57.25	-55.35	-3.711*	0.075	-0.091	-0.880*	-0.017	0.115	0.5898	249.
	(0.32)	(1.42)	(1.34)	(15.75)	(0.57)	(0.36)	(1.93)	(0.50)	(0.90)		
422 Textile Mill Products	46.23*	-266.47*	410.87*	-0.677	0.117	-0.166	0.602	0.136*	-0.152	0.5305	156.
	(3.67)	(3.55)	(3.65)	(1.22)	(0.77)	(0.78)	(1.47)	(4.27)	(1.32)		
426 Paper and Allied Products	6.64*	-15.93	33.66	-1.468*	-0.088	-0.284*	0.079	0.027	0.254*	0.6303	178.
	(2.20)	(0.89)	(1.21)	(9.05)	(1.05)	(1.52)	(0.30)	(0.93)	(2.82)		
429 Petroleum Refining and Related Products	-2.08	2.14	27.51	-0.532	0.362*	-1.916*	1.391*	0.133*	0.539*	0.8760	49.
	(0.61)	(0.08)	(0.68)	(1.05)	(2.21)	(2.64)	(2.99)	(2.25)	(1.86)		
430 Rubber and Miscellaneous Plastics Products	21.36*	-102.61*	151.54*	-1.795*	0.462*	-0.674*	0.951*	0.261*	0.028	0.6765	107.
	(1.12)	(2.39)	(2.55)	(3.84)	(1.88)	(1.70)	(1.84)	(3.93)	(0.17)		

TABLE A-3

Dependent Variable: Separations

$\hat{w}$: Taxable Wage Base of UI (d-vided by 100)

	CONST	$\hat{w}$	$\hat{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	14.41*	-44.16*	81.23*	-1.570*	-0.458*	0.147	-0.445	-0.059*	0.097	0.3981	193.
	(3.41)	(1.64)	(1.79)	(4.99)	(4.00)	(0.46)	(1.08)	(1.86)	(0.66)		
333 Primary Metal Products	14.18*	-79.70*	356.42*	-2.000*	-0.359*	-0.494*	0.767*	0.082*	0.875*	0.5591	210.
	(4.43)	(3.55)	(4.19)	(9.28)	(3.11)	(1.95)	(1.81)	(2.31)	(6.45)		
334 Fabricated Metal Products	19.77*	-89.46*	382.32*	-2.333*	0.055	-0.406*	0.139	0.017	0.384*	0.5295	206.
	(5.51)	(3.79)	(3.96)	(9.01)	(0.51)	(1.66)	(0.37)	(0.58)	(3.29)		
335 Machinery except Electrical	7.60*	-12.20	30.93	-1.498*	0.188*	-0.513*	-0.488	0.014	0.160*	0.4355	200.
	(2.50)	(0.57)	(0.79)	(8.03)	(1.70)	(2.57)	(1.45)	(0.51)	(1.61)		
336 Electrical Machinery	-15.78*	117.81*	-159.44*	-1.310*	-0.214*	0.756*	-0.394	-0.016	-0.128	0.4419	202.
	(1.92)	(2.48)	(2.35)	(5.99)	(1.87)	(3.43)	(1.03)	(0.55)	(1.15)		
337 Transportation Equipment	2.75	22.02	-8.40	-2.042*	-0.114	0.473	-1.207*	-0.150*	0.358	0.4294	150.
	(0.14)	(0.18)	(0.04)	(6.15)	(0.46)	(0.88)	(1.67)	(2.31)	(1.31)		
420 Food and Kindred Products	-6.97	144.77*	-265.24*	-2.963*	0.036	1.084*	-0.565	0.038	-0.580*	0.3741	249.
	(1.13)	(2.50)	(2.54)	(8.79)	(0.19)	(3.02)	(0.87)	(0.77)	(3.19)		
422 Textile Mill Products	25.54*	-171.55*	266.11*	0.670	-0.003	0.501*	-0.007	0.123*	-0.398*	0.4725	156.
	(1.69)	(1.83)	(1.69)	(0.96)	(0.02)	(1.67)	(0.01)	(3.07)	(2.74)		
426 Paper and Allied Products	6.98*	-11.50	23.00	-1.468*	0.055	-0.365*	0.090	0.044*	0.190*	0.5787	178.
	(2.36)	(0.66)	(0.84)	(9.27)	(0.67)	(1.96)	(0.35)	(1.69)	(2.15)		
429 Petroleum Refining and Related Products	-12.46	19.09	-28.95	2.110*	2.817*	-1.477	3.597*	0.231*	-0.714	0.7962	49.
	(1.31)	(0.40)	(0.35)	(2.20)	(3.72)	(1.15)	(3.99)	(2.07)	(1.30)		
430 Rubber and Miscellaneous Plastics Products	14.72*	-37.32	62.96	-3.128*	-0.488*	0.521	1.376*	0.211*	-0.020	0.7464	107.
	(2.30)	(1.02)	(1.15)	(7.28)	(2.16)	(1.43)	(2.89)	(3.46)	(0.13)		

TABLE A-4

Dependent Variable: Quits

$\tilde{w}$: Taxable Wage Base of UI (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	11.04*	-42.71*	86.30*	-2.226*	-0.246*	-0.029	0.384*	0.001	0.142*	0.7074	193.
	(4.55)	(2.76)	(3.30)	(12.31)	(3.43)	(0.16)	(1.62)	(0.04)	(1.67)		
333 Primary Metal Products	10.92*	-52.00*	96.52*	-1.568*	-0.347*	-0.990*	0.851*	0.069*	0.881*	0.7052	210.
	(4.74)	(3.50)	(3.62)	(12.70)	(4.22)	(5.43)	(2.79)	(2.71)	(9.05)		
334 Fabricated Metal Products	12.74*	-46.67*	90.24*	-2.766*	0.016	-0.664*	0.381*	0.026	0.456*	0.7688	206.
	(5.53)	(3.08)	(3.41)	(16.64)	(0.16)	(4.24)	(1.59)	(1.33)	(6.11)		
335 Machinery except Electrical	9.29*	-34.27*	69.23*	-1.512*	0.163*	-0.595*	-0.336*	-0.006	0.155*	0.6921	200.
	(5.17)	(2.72)	(2.98)	(13.67)	(2.48)	(5.02)	(1.69)	(0.37)	(2.65)		
336 Electrical Machinery	-10.83*	86.98*	-112.63*	-1.399*	-0.222*	0.606*	-0.493*	-0.009	-0.225*	0.6505	202.
	(1.95)	(2.71)	(2.55)	(9.46)	(2.87)	(4.06)	(1.90)	(0.44)	(2.98)		
337 Transportation Equipment	3.65	15.93	-24.18	-1.855*	0.151*	-0.655*	0.022	-0.018	0.244*	0.7941	150.
	(0.60)	(0.41)	(0.35)	(17.77)	(1.94)	(3.88)	(0.10)	(0.89)	(2.84)		
420 Food and Kindred Products	3.32	30.96	-50.15	-3.391*	0.181*	-0.234	-0.554	-0.010	0.103	0.6275	249.
	(0.70)	(0.90)	(0.79)	(16.84)	(1.60)	(1.09)	(1.42)	(0.35)	(0.95)		
422 Textile Mill Products	36.78*	-193.95*	256.33*	-2.284*	0.004	-0.259	0.411	0.055*	0.071	0.6061	156.
	(3.50)	(3.13)	(3.21)	(4.94)	(0.03)	(1.46)	(1.16)	(2.07)	(0.74)		
426 Paper and Allied Products	4.58*	-14.02	26.47	-0.905*	-0.030	-0.282*	0.231	0.029*	0.170*	0.6535	178.
	(2.30)	(1.19)	(1.44)	(8.48)	(0.54)	(2.25)	(1.33)	(1.80)	(2.86)		
429 Petroleum Refining and Related Products	-13.06	33.69	-46.57	1.708	2.353*	-2.747	2.262	0.234	0.045	0.4812	49.
	(0.79)	(0.40)	(0.35)	(1.03)	(1.79)	(1.24)	(1.45)	(1.21)	(0.05)		
430 Rubber and Miscellaneous Plastics Products	13.04*	-56.81*	78.66*	-1.822*	-0.025	-0.363*	0.833*	0.139*	0.142	0.7993	107.
	(3.17)	(2.16)	(2.23)	(6.57)	(0.17)	(1.54)	(2.72)	(3.53)	(1.41)		

TABLE A-5

Dependent Variable: Layoffs

$\hat{w}$: Taxable Wage Base of UI (divided by 100)

	CONST	$\hat{w}$	$\hat{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	0.87 (0.32)	8.59 (0.38)	-19.75 (0.68)	1.025* (5.11)	-0.034 (0.43)	-0.137 (0.68)	-0.591* (2.25)	-0.059* (2.91)	-0.032 (0.34)	0.3365	193.
333 Primary Metal Products	2.43 (1.22)	-19.83* (1.54)	39.92* (1.72)	0.173 (1.29)	-0.093 (1.30)	0.436* (2.77)	-0.054 (0.20)	0.017 (0.77)	-0.077 (0.92)	0.4230	210.
334 Fabricated Metal Products	4.48* (2.30)	-36.12* (2.35)	69.62* (2.22)	0.746* (5.31)	0.037 (0.59)	0.118 (0.89)	-0.243 (1.19)	-0.020 (1.20)	-0.060 (0.94)	0.5067	206.
335 Machinery except Electrical	-3.40* (1.73)	29.09* (2.11)	-51.56* (2.03)	0.067 (0.55)	-0.029 (0.40)	0.160 (1.24)	0.040 (0.19)	0.017 (0.93)	0.004 (0.06)	0.4321	200.
336 Electrical Machinery	-5.33 (1.34)	27.10 (1.18)	-35.95 (1.09)	0.064 (0.80)	0.100* (1.80)	0.003 (0.03)	0.200 (1.07)	0.005 (0.39)	0.139* (2.56)	0.5780	202.
337 Transportation Equipment	-0.28 (0.02)	1.33 (0.01)	-16.87 (0.09)	-0.019 (0.06)	-0.273 (1.16)	1.091* (2.14)	-1.398* (2.04)	-0.129* (2.10)	0.087 (0.34)	0.3441	150.
420 Food and Kindred Products	-11.65* (1.94)	102.90* (2.35)	-200.42* (2.49)	0.605* (2.38)	-0.060 (0.41)	1.314* (4.83)	0.018 (0.04)	0.040 (1.08)	-0.708* (5.14)	0.2153	249.
422 Textile Mill Products	-15.93 (1.45)	79.82 (1.23)	-121.38 (1.25)	2.672* (5.54)	0.015 (0.12)	0.717* (3.88)	-0.728* (1.97)	0.014 (0.50)	-0.393* (3.92)	0.4788	156.
426 Paper and Allied Products	2.46 (1.42)	-1.55 (0.15)	0.58 (0.06)	-0.408* (4.40)	0.061* (1.65)	-0.142 (1.31)	-0.054 (0.36)	0.013 (0.91)	0.044 (0.86)	0.3933	178.
429 Petroleum Refining and Related Products	-8.13 (1.01)	6.64 (0.16)	-20.57 (0.32)	2.605* (2.46)	1.548* (2.41)	0.075 (0.07)	2.367* (3.10)	0.102 (1.08)	-0.895* (1.92)	0.7452	49.
430 Rubber and Miscellaneous Plastics Products	-2.56 (0.70)	31.20 (1.49)	-45.18 (1.44)	-1.046* (4.25)	-0.368* (2.65)	0.726* (3.47)	0.667* (2.45)	0.036 (1.03)	-0.014 (0.15)	0.7221	107.

TABLE A-6

Dependent Variable: Accessions

$\tilde{w}$: Mean of Taxable Wage Bases for UI and Social Security (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	-12.60 (0.92)	9.46 (1.42)	-0.92 (1.32)	-1.673* (5.50)	-0.483* (4.14)	0.276 (0.73)	-0.299 (0.79)	-0.041 (1.40)	0.040 (0.58)	0.4141	195.
333 Primary Metal Products	-46.29* (2.28)	24.14* (2.44)	-2.64* (2.37)	-2.025* (9.09)	-0.476* (3.92)	-0.574* (2.45)	1.176* (2.63)	0.107* (2.97)	0.933* (6.72)	0.5449	210.
334 Fabricated Metal Products	-24.17 (1.41)	13.23* (1.42)	-1.40* (1.71)	-2.718* (9.42)	-0.026 (0.21)	-0.373 (1.44)	0.264 (0.66)	0.037 (1.16)	0.423* (3.44)	0.5037	206.
335 Machinery except Electrical	5.08 (0.36)	1.17 (0.19)	-0.12 (0.16)	-1.564* (8.42)	0.171* (1.52)	-0.257* (2.77)	-0.417 (1.23)	0.015 (0.54)	0.141 (1.43)	0.5094	200.
336 Electrical Machinery	-12.44* (1.63)	6.53* (2.34)	-0.42* (1.93)	-1.872* (8.16)	-0.239* (1.69)	0.512* (2.54)	-0.519 (1.76)	-0.044 (1.35)	0.030 (0.24)	0.4539	202.
337 Transportation Equipment	-29.46* (1.67)	14.71* (2.56)	-1.09* (1.70)	-1.696* (5.94)	-0.120 (0.51)	0.317 (0.62)	-1.457* (2.11)	-0.207* (3.37)	0.368 (1.43)	0.4020	150.
420 Food and Kindred Products	73.61* (2.60)	-27.55* (2.23)	2.73* (2.24)	-3.350* (9.13)	0.123 (0.60)	0.777* (2.52)	-0.996 (1.77)	0.034 (0.53)	-0.582* (2.91)	0.3823	249.
422 Textile Mill Products	-19.32* (1.96)	7.76* (2.05)	-0.59* (1.75)	0.250 (0.79)	0.022 (0.12)	0.419* (1.63)	0.426 (0.87)	0.138* (3.79)	-0.391* (2.13)	0.4222	156.
426 Paper and Allied Products	-4.66 (0.50)	3.58 (1.06)	-0.32 (0.97)	-1.529* (8.87)	-0.010 (0.32)	-0.456* (2.25)	-0.041 (0.14)	0.041* (1.50)	0.252* (2.59)	0.5915	178.
429 Petroleum Refining and Related Products	-14.56 (0.90)	2.60 (0.38)	0.01 (0.01)	-0.649 (0.78)	1.715* (3.35)	-1.344* (1.39)	3.007* (5.65)	0.193* (2.63)	-0.044 (0.14)	0.8714	49.
430 Rubber and Miscellaneous Plastics Products	-2.56 (0.20)	3.40 (0.78)	-0.26 (0.59)	-2.949* (5.47)	-0.339 (1.72)	0.203 (0.45)	1.292* (2.44)	0.221* (1.08)	0.087 (0.44)	0.5713	107.

TABLE A-7

Dependent Variable: New Hires

$\tilde{w}$: Mean of Taxable Wage Bases for UI and Social Security (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	-31.57*	15.70*	-1.63*	-2.402*	-0.422*	0.714	0.175	0.000	0.078	0.6352	193.
	(2.87)	(3.29)	(2.92)	(10.13)	(4.50)	(0.91)	(0.61)	(0.00)	(0.99)		
333 Primary Metal Products	-42.56*	21.56*	-2.37*	-2.293*	-0.334*	-0.393*	1.076*	0.339*	0.922*	0.6515	210.
	(2.13)	(2.34)	(2.29)	(11.02)	(2.94)	(4.13)	(2.69)	(2.61)	(7.19)		
334 Fabricated Metal Products	-22.20	13.13*	-1.31*	-3.344*	-0.083	-0.356*	0.439	0.055*	0.440*	0.6835	206.
	(1.45)	(1.93)	(1.78)	(13.56)	(0.74)	(2.34)	(1.23)	(1.93)	(3.95)		
335 Machinery except Electrical	-0.24	3.21	-0.31	-1.973*	0.156	-0.342*	-0.119	0.073	0.036	0.6341	200.
	(0.02)	(0.52)	(0.43)	(10.50)	(1.43)	(5.10)	(0.38)	(0.88)	(1.04)		
336 Electrical Machinery	-11.09*	5.76*	-0.59*	-1.849*	-0.241*	0.665*	-0.882*	-0.023	-0.182*	0.6961	202.
	(1.90)	(2.79)	(2.51)	(10.54)	(2.62)	(3.61)	(2.44)	(0.95)	(1.96)		
337 Transportation Equipment	12.43	-1.32	0.21	-2.356*	0.146	-0.521*	0.174	-0.021	0.134	0.7358	150.
	(1.41)	(0.53)	(0.44)	(15.02)	(1.25)	(2.14)	(0.50)	(0.69)	(1.43)		
420 Food and Kindred Products	28.72*	-4.74	1.00	-2.701*	0.087	-0.331	-0.905*	-0.017	0.107	0.5891	249.
	(1.58)	(1.10)	(1.14)	(15.72)	(0.66)	(0.32)	(2.00)	(0.50)	(0.93)		
422 Textile Mill Products	-21.15*	8.56*	-0.64*	-0.444*	0.077	-0.262*	0.786*	0.154*	-0.102	0.5001	156.
	(2.45)	(2.56)	(2.16)	(3.79)	(0.50)	(1.17)	(1.92)	(4.79)	(0.81)		
426 Paper and Allied Products	-9.00	4.95	-0.52	-1.448*	-0.100	-0.266	0.100	0.021	0.257*	0.6299	178.
	(1.07)	(1.45)	(1.14)	(9.93)	(1.20)	(1.64)	(0.38)	(0.95)	(2.91)		
429 Petroleum Refining and Related Products	-16.38	6.25	-0.05	-0.636	0.926*	-1.661*	1.552*	0.165*	0.442*	0.6737	49.
	(1.31)	(0.77)	(0.09)	(0.78)	(2.27)	(2.56)	(1.73)	(2.52)	(1.74)		
430 Rubber and Miscellaneous Plastics Products	0.61	1.51	-0.17	-1.738*	0.430*	-0.731*	1.400*	0.310*	0.046	0.6455	197.
	(0.05)	(0.44)	(0.45)	(3.40)	(1.67)	(1.69)	(2.76)	(4.67)	(0.75)		

TABLE A-8

Dependent Variable: Separations

$\tilde{w}$: Mean of Taxable Wage Bases for UI and Social Security (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	-14.37 (0.98)	2.43 (1.45)	-0.92 (1.36)	-1.574* (4.92)	-0.508* (4.06)	0.222 (0.71)	-0.390 (0.93)	-0.354* (1.70)	0.071 (0.49)	0.3935	193.
333 Primary Metal Products	-55.85* (2.65)	26.38* (2.74)	-2.85* (2.62)	-1.851* (8.57)	-0.411* (3.48)	-0.257 (0.96)	1.154* (2.94)	0.112* (3.19)	0.754* (5.64)	0.5546	210.
334 Fabricated Metal Products	-39.51* (2.42)	20.43* (2.83)	-2.16* (2.76)	-2.274* (8.82)	0.015 (0.13)	-0.301 (1.72)	0.315 (0.94)	0.025 (0.97)	0.343* (2.89)	0.5095	206.
335 Machinery except Electrical	-5.12 (0.55)	6.33 (0.97)	-0.61 (0.95)	-1.436* (8.02)	0.126* (1.68)	-0.309* (2.36)	-0.491 (1.45)	0.015 (0.54)	0.157* (1.60)	0.4358	230.
336 Electrical Machinery	-14.77* (2.02)	6.30* (2.58)	-0.45* (2.12)	-1.424* (6.45)	-0.178* (1.55)	0.635* (2.97)	-0.619* (1.59)	-0.043 (1.41)	-0.067 (0.57)	0.4389	232.
337 Transportation Equipment	-27.52 (1.48)	12.62* (1.73)	-0.95 (1.29)	-2.011* (6.09)	-0.062 (0.25)	0.159 (0.60)	-1.433* (1.75)	-0.158* (2.44)	0.364 (1.34)	0.4368	150.
420 Food and Kindred Products	66.93* (2.57)	-24.89* (2.18)	2.62* (2.17)	-2.974* (8.59)	0.066 (0.35)	1.106* (3.04)	-0.641 (0.98)	0.038 (0.75)	-0.597* (3.24)	0.3695	249.
422 Textile Mill Products	-19.53* (1.89)	3.05* (1.96)	-0.62* (1.72)	0.796 (1.01)	-0.035 (0.19)	0.408 (1.48)	0.075 (0.14)	0.132* (3.34)	-0.337* (2.20)	0.4701	156.
426 Paper and Allied Products	-8.91 (1.08)	5.51* (1.66)	-0.43 (1.46)	-1.445* (7.14)	0.042 (0.52)	-0.579* (2.10)	0.070 (0.25)	0.039* (1.62)	0.212* (2.38)	0.5927	178.
429 Petroleum Refining and Related Products	-11.47 (0.48)	0.90 (0.05)	-0.04 (0.04)	2.010* (2.18)	2.757* (3.63)	-1.639 (1.35)	3.432* (4.39)	0.218* (2.92)	-0.618 (1.29)	0.7891	49.
430 Rubber and Miscellaneous Plastics Products	3.99 (0.30)	1.39 (0.32)	-0.04 (0.12)	-2.094* (6.96)	-0.479* (2.17)	0.513 (1.19)	1.565* (3.44)	0.237* (3.92)	-0.016 (0.10)	0.7363	107.

TABLE A-9

Dependent Variable: Quits

$\tilde{w}$: Mean of Taxable Wage Bases for UI and Social Security (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	-65.46*	12.59*	-1.13*	-2.237*	-0.257*	0.071	0.439*	0.005	0.126	0.7044	193.
	(3.02)	(3.43)	(3.01)	(12.75)	(3.57)	(0.17)	(1.86)	(0.27)	(1.49)		
333 Primary Metal Products	-46.30*	22.76*	-2.55*	-1.900*	-0.385*	-0.450*	1.072*	0.084*	0.832*	0.7024	210.
	(3.13)	(4.38)	(3.34)	(17.65)	(4.48)	(4.73)	(3.65)	(3.40)	(8.44)		
34 Fabricated Metal Products	-18.86*	10.7e*	-1.07*	-2.731*	-0.005	-0.338*	0.492*	0.034*	0.429*	0.7601	296.
	(1.21)	(2.36)	(2.14)	(16.19)	(0.12)	(3.79)	(2.03)	(1.72)	(5.55)		
335 Machinery except Electrical	-3.54	3.44	-0.35	-1.504*	0.157*	-0.342*	-0.215	0.005	0.119*	0.6776	290.
	(0.42)	(0.92)	(0.77)	(13.79)	(2.33)	(4.49)	(1.07)	(0.32)	(2.01)		
336 Electrical Machinery	-10.23*	5.13*	-0.33*	-1.482*	-0.196*	0.355*	-0.657*	-0.028	-0.181*	0.6480	292.
	(2.07)	(2.39)	(2.23)	(9.96)	(2.52)	(3.36)	(2.49)	(1.33)	(2.27)		
337 Transportation Equipment	11.71*	-2.28	0.22	-1.252*	0.143*	-0.679*	0.058	-0.017	0.242*	0.7958	150.
	(2.00)	(1.00)	(1.02)	(17.36)	(1.94)	(5.70)	(0.30)	(0.91)	(2.95)		
420 Food and Kindred Products	14.40	-3.31	0.43	-3.395*	0.137*	-0.233	-0.573	-0.010	0.102	0.6271	249.
	(0.93)	(0.49)	(0.60)	(16.82)	(1.65)	(1.70)	(1.68)	(0.35)	(0.92)		
422 Textile Mill Products	-12.15*	5.1e*	-0.46*	-2.112*	-0.024	-0.328*	0.544*	0.048*	0.106	0.5800	156.
	(1.70)	(2.22)	(1.82)	(4.46)	(0.19)	(1.76)	(1.53)	(2.56)	(1.02)		
426 Paper and Allied Products	-13.48*	6.45*	-0.55*	-0.579*	-0.045	-0.239*	0.208	0.022	0.197*	0.6634	178.
	(2.45)	(2.82)	(2.58)	(5.33)	(0.82)	(2.44)	(1.23)	(1.38)	(3.30)		
429 Petroleum Refining and Related Products	-22.56	5.46	-0.58	1.504	2.194*	-2.454	1.999	0.203	0.221	0.4807	69.
	(0.55)	(0.37)	(0.42)	(0.94)	(1.68)	(1.67)	(1.47)	(1.09)	(0.77)		
430 Rubber and Miscellaneous Plastics Products	-6.38	4.13*	-0.35	-1.684*	-0.065	-0.605*	0.987*	0.157*	0.134*	0.7928	197.
	(0.94)	(1.58)	(1.49)	(6.48)	(0.44)	(1.99)	(1.33)	(4.09)	(1.73)		

TABLE A-10

Dependent Variable: Layoffs

$\tilde{w}$: Mean of Taxable Wage Bases for UI and Social Security (divided by 100)

	CONST	$\tilde{w}$	$\tilde{w}^2$	w	NEGTAX	MAXTAX	SLOPE	MINRES	MINTAX	R^2	NOBS
332 Stone, Clay Glass and Concrete Products	12.88 (1.38)	-6.46 (1.10)	0.36 (0.46)	1.031* (5.13)	-0.031 (0.39)	-0.161 (0.71)	-0.595* (7.29)	-0.059* (2.95)	-0.035 (0.37)	0.3376	193.
333 Primary Metal Products	-2.35 (0.16)	0.70 (0.12)	-0.02 (0.05)	0.225* (1.70)	-0.092 (1.35)	0.577* (3.44)	0.046 (0.74)	0.028 (1.30)	-0.130* (1.40)	0.4158	210.
334 Fabricated Metal Products	-10.54 (1.21)	4.31 (1.77)	-0.58 (1.77)	0.766* (5.42)	0.024 (0.38)	0.158 (1.19)	-0.140 (0.49)	-0.015 (0.92)	-0.075 (1.19)	0.4984	206.
335 Machinery except Electrical	-4.70 (0.52)	2.40 (0.56)	-0.25 (0.50)	0.060 (0.49)	-0.021 (0.32)	0.197 (0.76)	-0.100 (0.46)	0.004 (0.21)	0.045 (0.70)	0.4196	200.
336 Electrical Machinery	-4.03 (1.14)	1.16 (0.89)	-0.06 (0.59)	0.064 (0.60)	0.107* (1.91)	0.001 (0.01)	0.163 (0.95)	0.001 (0.07)	0.146* (2.56)	0.5760	202.
337 Transportation Equipment	-32.9e* (1.96)	12.56* (1.93)	-0.83* (1.50)	0.014 (0.04)	-0.222 (0.95)	0.970* (1.99)	-1.633* (2.37)	-0.178* (2.24)	0.094 (0.37)	0.3556	150.
420 Food and Kindred Products	50.99* (2.59)	-21.72* (2.45)	2.18* (2.34)	0.629* (2.46)	-0.037 (0.76)	1.542* (4.37)	-0.025 (0.35)	0.040 (1.09)	-0.737* (5.21)	0.2128	249.
422 Textile Mill Products	2.18 (0.30)	-1.31 (0.53)	0.14 (0.58)	7.5e6* (5.72)	0.075 (0.19)	0.768* (1.97)	-0.792* (2.16)	0.008 (0.29)	-0.402* (3.76)	0.4740	156.
426 Paper and Allied Products	5.53 (1.14)	-1.30 (0.64)	0.11 (0.57)	-0.412* (4.44)	0.013* (1.72)	-0.136 (1.19)	-0.035 (0.26)	0.015 (1.07)	0.031 (0.63)	0.3946	178.
429 Petroleum Refining and Related Products	4.36 (0.22)	-2.32 (0.51)	0.34 (0.32)	1.24e* (2.50)	1.562* (3.42)	-0.397 (0.19)	2.248* (3.39)	0.099 (1.08)	-0.873* (2.05)	0.7456	49.
430 Rubber and Miscellaneous Plastics Products	13.01* (2.22)	-4.11* (1.32)	0.40* (1.05)	-0.964* (3.85)	-0.327* (2.53)	0.772* (3.73)	0.636* (9.49)	0.031 (0.91)	-0.063 (0.68)	0.7276	107.